Annex O Olympic Valley Fire Department/Olympic Valley Public Service District

O.1 Introduction

This Annex details the hazard mitigation planning elements specific to Olympic Valley Fire Department/Olympic Valley Public Service District (OVFD/OVPSD or District), a previously participating jurisdiction to the 2016 Placer County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document, but appends to and supplements the information contained in the Base Plan document. As such, all sections of the Base Plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to OVFD/OVPSD, with a focus on providing additional details on the risk assessment and mitigation strategy for the District.

O.2 Planning Process

As described above, the District followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Placer County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table O-1. Additional details on plan participation and District representatives are included in Appendix A.

Table O-1 OVFD/OVPSD – Planning Team

Name	Position/Title	How Participated
Brandon Burks	Operations Manager	Planning, participant
Allen Riley	Fire Chief	Planning, participant

Coordination with other community planning efforts is paramount to the successful implementation of this LHMP Update. This section provides information on how the District integrated the previously approved 2016 Plan into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2016 LHMP through other plans and programs shown in Table O-2.

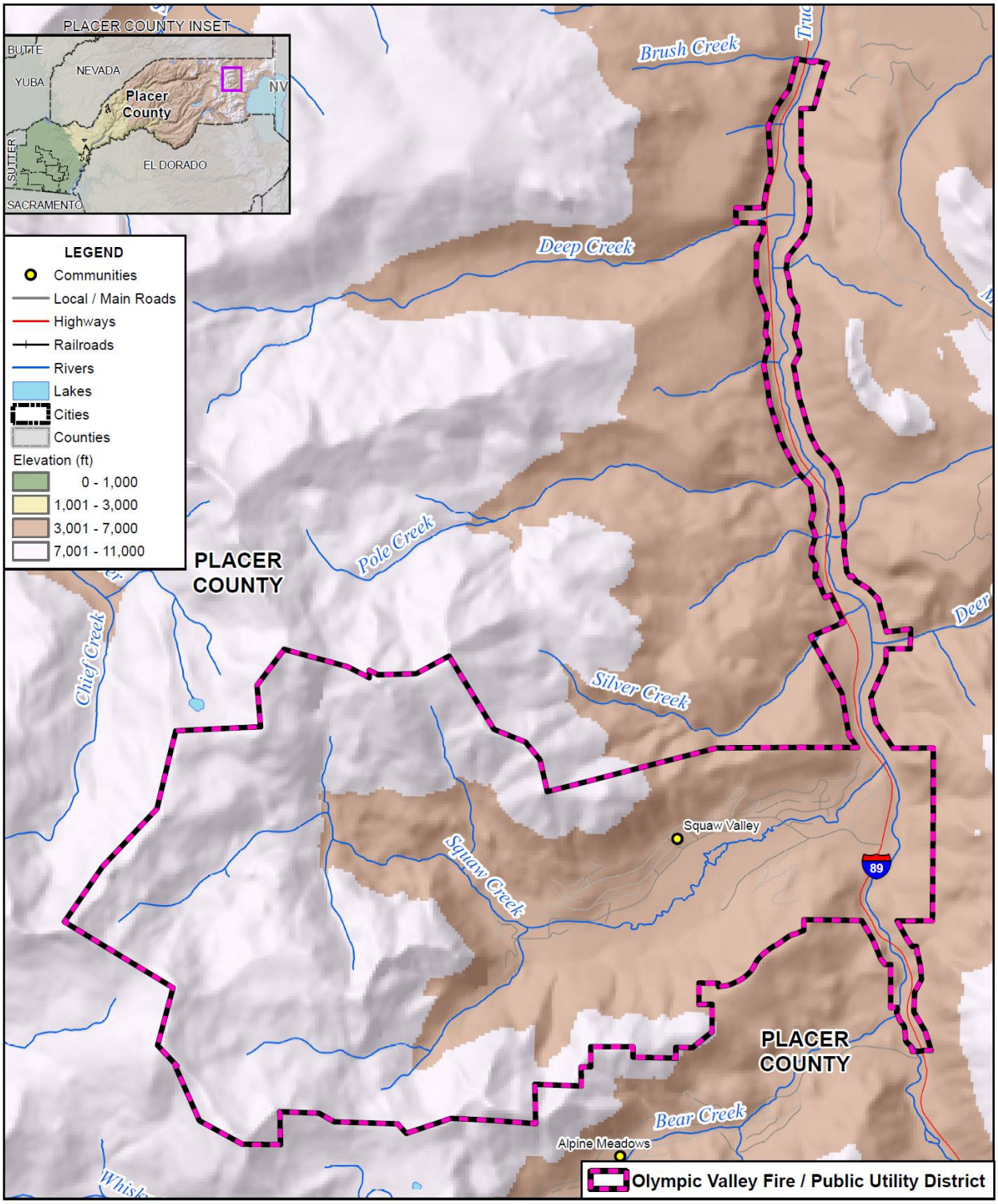
Table O-2 2016 LHMP Incorporation

Planning Mechanism 2016 LHMP Was Incorporated/Implemented In.	Details: How was it incorporated?
N/A	No mitigation planning mechanisms have been completed since 2016.

O.3 District Profile

The District profile for the OVFD/OVPSD is detailed in the following sections. Figure O-1 displays a map and the location of the District within Placer County.

Figure O-1 OVFD/OVPSD



Data Source: Placer County GIS, Cal-Atlas, NVBLM; Map Date: 2021.

O.3.1. Overview and Background

The Olympic Valley Public Services District (OVPSD) serves the community of Olympic Valley in providing water, maintaining sewer Lines, contracting garbage service, and providing fire protection services to the community. The OVPSD encompasses approximately 5,350 acres within the Olympic Valley. Elevations within the District boundaries range from 6,100 to 9,000 feet above mean sea level.

The OVPSD serves a population of approximately 924 year-round residents, with a maximum overnight population of approximately 6,573. Both resident and visiting populations are housed in approximately 663 residential unit, 1,180 condominiums, and approximately 20 commercial entities consisting of private residences, ski resorts, hotels and supporting businesses.

The Olympic Valley is characterized by mild summers and cool, wet winters, with an average high temperature in July of 82 and 42 in January. Annual precipitation in the watershed varies from an average of 65 inches in the west to approximately 40 inches per year in the east. The majority of precipitation occurs as snowfall during the winter months. A relatively small amount of precipitation occurs as rain during the spring and summer months.

O.4 Hazard Identification

OVFD/OVPSD identified the hazards that affect the District and summarized their location, extent, frequency of occurrence, potential magnitude, and significance specific to District (see Table O-3).

Table O-3 OVFD/OVPSD —Hazard Identification Assessment

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/ Severity	Significance	Climate Change Influence
Agriculture Pests and Diseases	Limited	Unlikely	Negligible	Low	Medium
Avalanche	Significant	Likely	Limited	Medium	Medium
Climate Change	–	–	–	–	–
Dam Failure	Limited	Unlikely	Limited	Medium	Medium
Drought & Water Shortage	Significant	Occasional	Negligible	Low	High
Earthquake	Limited	Occasional	Critical	Medium	Low
Floods: 1%/0.2% annual chance	Limited	Occasional	Limited	High	Medium
Floods: Localized Stormwater	Limited	Likely	Limited	Medium	Medium
Landslides, Mudslides, and Debris Flows	Limited	Occasional	Limited	Medium	Medium
Levee Failure	Limited	Unlikely	Negligible	Low	Medium
Pandemic	–	–	–	–	Medium
Seiche	Limited	Unlikely	Negligible	Low	Medium
Severe Weather: Extreme Heat	Limited	Occasional	Negligible	Low	High
Severe Weather: Freeze and Snow	Significant	Highly Likely	Limited	Medium	Medium
Severe Weather: Heavy Rains and Storms	Significant	Highly Likely	Limited	Medium	Medium
Severe Weather: High Winds and Tornadoes	–	–	–	–	Low
Tree Mortality	Extensive	Likely	Critical	High	High
Wildfire	Extensive	Highly Likely	Critical	High	High

Geographic Extent
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Likelihood of Future Occurrences
Highly Likely: Near 100% chance of occurrence in next year, or happens every year.
Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity
Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability
Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability
Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

Significance
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

Climate Change Influence
Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

O.5 Hazard Profile and Vulnerability Assessment

The intent of this section is to profile the District's hazards and assess the District's vulnerability separate from that of the Placer County Planning Area as a whole, which has already been assessed in Section 4.3 Hazard Profiles and Vulnerability Assessment in the Base Plan. The hazard profiles in the Base Plan discuss overall impacts to the Placer County Planning Area and describes the hazard problem description, hazard location and extent, magnitude/severity, previous occurrences of hazard events and the likelihood of future occurrences. Hazard profile information specific to the District is included in this Annex. This vulnerability assessment analyzes the property and other assets at risk to hazards ranked of medium or high significance specific to the District. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the Base Plan.

O.5.1. Hazard Profiles

Each hazard vulnerability assessment in Section O.5.3, includes a hazard profile/problem description as to how each medium or high significant hazard (as shown in Table O-3) affects the District and includes information on past hazard occurrences and the likelihood of future hazard occurrence. The intent of this section is to provide jurisdictional specific information on hazards and further describes how the hazards and risks differ across the Placer County Planning Area.

O.5.2. Vulnerability Assessment and Assets at Risk

This section identifies the District's total assets at risk, including values at risk, populations at risk, critical facilities and infrastructure, natural resources, and historic and cultural resources. Growth and development trends are also presented for the District. This data is not hazard specific, but is representative of total assets at risk within the District.

Assets at Risk and Critical Facilities

This section considers the OVFD/OVPSD 's assets at risk, with a focus on key District assets such as critical facilities, infrastructure, and other District assets and their values. With respect to District assets, the majority of these assets are considered critical facilities as defined for this Plan. Critical facilities are defined for this Plan as:

> ***Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.***

This definition is further refined by separating out three classes of critical facilities:

> ***Class 1 facilities include those facilities that contribute to command, control, communications and computer capabilities associated with managing an incident from initial response through recovery.***

Class 2 facilities include those facilities that house Emergency Services capabilities.

Class 3 facilities are those facilities that enable key utilities and can be used as evacuation centers/shelters/mass prophylaxis sites, etc.

Additional information on the three classes of critical facilities is described further in Section 4.3.1 of the Base Plan.

Table O-4 lists critical facilities and other District assets identified by the District Planning Team as important to protect in the event of a disaster. OVFD/OVPSD 's physical assets, valued at over $450 million, consist of the buildings and infrastructure to support the District's operations.

Table O-4 OVFD/OVPSD Critical Facilities, Infrastructure, and Other District Assets

Name of Asset	Facility Type	Replacement Value	Hazard Info
Squaw Ridge Booster and Vault	Essential	$325,000	Earthquake, wildfire
Fire Station & Administrative Center	Essential	$12.5 million	Earthquake, Landslide, Wildfire
Headquarters & Utility/Fire Station	Essential	$7.5 million	Flood, Earthquake, Landslide
Pumphouse and Generator	Essential	$1.6 million	Earthquake, flood
Utility Garage and Generator	Essential	$575,000	Earthquake, landslide, Wildfire
SCADA System	Essential	$210,000	Extreme Weather
Water Tank #1	Lifeline	$1,100,000	Earthquake, Landslide
Water Tank #2	Lifeline	$700,000	Earthquake, Landslide
Water Tank #3	Lifeline	$300,000	Earthquake, Landslide
Convault Tank	Lifeline	$40,000	Wildfire
Main Well #5	Lifeline	$1.5 million	Earthquake, Flood
Well #2	Lifeline	$250,000	Earthquake, Flood
Well #3	Lifeline	$250,000	Earthquake, Flood
Well #1	Lifeline	$250,000	Earthquake, Flood
Squaw Valley USA Resort	High Potential Loss	$200 million	Wildfire, Avalanche, Earthquake, Landslide
Resort at Squaw Creek	High Potential Loss	$80 million	Wildfire, Landslide, Earthquake
State Route 89	Transportation	Unknown	Avalanche, Landslide, Flood
Midway Bridge	Transportation	Unknown	Earthquake, Flood
SVPSD Water Distribution System	Lifeline	$25 million	Earthquake, Flood, Landslide
OVPSD Sewer Collection System	Lifeline	$25 million	Earthquake, Flood, Landslide

Name of Asset	Facility Type	Replacement Value	Hazard Info
Squaw Valley Mutual Water Company	Lifeline	$10 million	Earthquake, Flood, Landslide

Source: OVFD/OVPSD

Populations Served

Also potentially at risk should the District be affected by natural hazard events are the populations served by the District. OVFD/OVPSD provides services to a population of 1,366.

Natural Resources

OVFD/OVPSD has a variety of natural resources of value to the District. Several state or federally listed species may be found within the District boundary. These are identified, along with other species of concern found in the District, in Table O-5.

Table O-5 Species of Concern in OVFD/OVPSD

Common Name	Scientific Name	CNPS3 Listing Federal Status	State Status
Carson Range rock cress	*Arabis rigidissima var. demote*	1B	
Oregon fireweed	*Epilobium oreganum*	1B	
Starved daisy	*Erigeron miser*	1B	
Nevada daisy	*Erigeron nevadincola*	2	
Donner Pass buckwheat	*Eriogonum umbellatum var. torreyanum*	1B	
American manna grass	*Glyceria grandis*	2	
Plumas ivesia	*Ivesia sericoleuca*	1B	
Long-petaled lewisia	*Lewisia longipetala*	1B	
Slender-leaved pondweed	*Potamogeton filiformis*	2	
Tahoe yellow cress	*Rorippa subumbellata*	1B	
Marsh skullcap	*Scutellaria galericulata*	2	
Munroe's desert mallow	*Sphaeralcea munroana*	2	
Fish, Amphibians, Birds			
Lahontan cutthroat trout	*Oncorhynchus clarkia henshawi*	FT	
Mountain yellow-legged frog	*Rana muscosa*	FE	CSC
Harlequin duck	*Histrionicus histrionicus*	MNBMC	CSC
Cooper's hawk	*Accipiter cooperi*	MNBMC	CSC
Northern goshawk	*Accipiter gentiles*		CSC
Bald eagle	*Haliaeetus leucocephalus*	FT; FPD; MNBMC	SE; CFP
Osprey	*Pandion haliaetus*		CSC
Yellow warbler	*Dendroica petechia brewsteri*	MNBMC	CSC

Common Name	Scientific Name	CNPS3 Listing Federal Status	State Status
Willow flycatcher	*Empidonax traillii*	MNBMC	SE
Sierra Nevada mountain beaver	*Aplodontia rufa californica*		CSC
California wolverine	*Gulo gulo*		ST
Sierra Nevada snowshoe hare	*Lepus americanus tahoensis*		CSC
Western white-tailed jackrabbit	*Lepus townsendi*		CSC
American pine marten	*Martes Americana*		
Sierra marten	*Martes Americana sierrae*		
Pacific fisher	*Martes pennanti (pacifica) DPS*	FC	CSC
Long-legged myotis	*Myotis Volans*		
Sierra Nevada red fox	*Vulpes vulpes necator*		ST

Source: OVFD/OVPSD

Sensitive habitats in the District include the following:

- Lodgepole pine forest
- Red fir forest
- Montane chaparral
- Montane riparian
- Wet meadows
- Ponds
- Riverine/riparian

Historic and Cultural Resources

OVFD/OVPSD has a variety of historic and cultural resources of value to the District. These historic and cultural resources parallel that of Tahoe Area of Placer County as a whole. Information can be found in Section 4.3.1 of the Base Plan.

Squaw Valley has few residents that fit the category of special populations. The Village project identified below will seek an employee housing project; presently low income workers live mostly outside Squaw Valley.

Growth and Development Trends

Significant development is contemplated with expansion of the village at Squaw Valley; information may be obtained at Placer County under the Village at Squaw Valley Specific Plan. Additional projects on the near horizon include:

- PlumpJack Squaw Valley Inn: a plan to raze and rebuild an existing 61 unit hotel into a 60 unit hotel plus 34 condos. The project will include an underground parking garage that may be impacted by flooding on Squaw Peak Road.
- The Resort at Squaw Creek Phase II: A fully entitled project that would add a second tower and 18 Lakeside condos totaling 221 units, a parking garage and employee housing.

Projects in Planning include:

- The Palisades: Approximately 65 single family planned unit development currently being built.
- Carville Property Hotel and Residential Project- a boutique hotel and several homes

None of these projects pose a significant impact to existing hazards

Unique to this part of Placer County is not the growth of full time residents, but the influx of visitors and tourists to the area, especially during the peak summer and winter seasons. While this area is home to only about 924 full time residents, during high season, some 6,500 people, on any given day, may be enjoying the recreational and tourist opportunities. This spike in population creates a unique vulnerability to the area, especially in the event highways become impassable due to flooding, landslides, avalanches or gridlocks due to high volume and extreme weather conditions. Even during the off-season, the lack of multiple transportation routes, if closed, can leave the resident population cut off from necessary and potentially life-saving services.

It is important to note that given the high cost of housing due to the resort nature of the area, much of the work force resides outside of Squaw Valley. With limited access roads to the area, the work force may be isolated when most needed for disaster response.

Development since 2016

The District replaced its existing sewer siphon line under the Truckee River with a new dual siphon. Reducing the hazard of spilling sewage during flood events or other

Future Development

The District has no control over future development in areas the District services. More general information on growth and development in Placer County as a whole can be found in "Growth and Development Trends" in Section 4.3.1 Placer County Vulnerability and Assets at Risk of the Base Plan.

O.5.3. Vulnerability to Specific Hazards

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table O-3 as high or medium significance hazards. Impacts of past events and vulnerability of the District to specific hazards are further discussed below (see Section 4.1 Hazard Identification in the Base Plan for more detailed information about these hazards and their impacts on the Placer County Planning Area). Methodologies for evaluating vulnerabilities and calculating loss estimates are the same as those described in Section 4.3 of the Base Plan.

An estimate of the vulnerability of the District to each identified priority hazard, in addition to the estimate of likelihood of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

Depending on the hazard and availability of data for analysis, this hazard specific vulnerability assessment also includes information on values at risk, critical facilities and infrastructure, populations at risk, and future development.

Avalanche

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

According to the Sierra Avalanche Center, avalanches occur when loading of new snow increases stress at a rate faster than strength develops, and the slope fails. Avalanches are a rapid down-slope movement of snow, ice and debris triggered by ground shaking, sound, or human or animal movement. Avalanches consist of a starting zone where the ice or snow breaks loose, a track which is the grade or channel the debris slides down and a run-out zone where the snow is deposited.

Critical stresses develop more quickly on steeper slopes and where deposition of wind-transported snow is common. The vast majority of avalanches occur during and shortly after storms. This hazard generally affects a small number of people, such as snowboarders, skiers, and hikers who venture into backcountry areas during or after winter storms. Roads and highway closures, damaged structures, and destruction of forests are also a direct result of avalanches.

Location and Extent

The two primary factors impacting avalanche activity are weather and terrain. Large, frequent storms deposit snow on steep slopes to create avalanche hazards. Additional factors that contribute to slope stability are the amount of snow, rate of accumulation, moisture content, wind speed and direction and type of snow crystals. Topography also plays a vital role in avalanche dynamics. Slope angles between 30 to 45 degrees are optimal for avalanches. The risk of avalanches decreases on slope angles below 30 degrees. At 50 or more degrees they tend to produce sluff or loose snow avalanches that account for only a small percentage of avalanche deaths and property damage annually.

Areas prone to avalanche hazards include hard to access areas deep in the backcountry and those in the more developed higher elevations of the County in the Tahoe basin. Avalanche hazards exist in eastern Placer County where the District is located where combinations of the above criteria occur.

Past Occurrences

There have been no state or federal disasters in the County related to avalanche. In 2001 during a winter storm generating 20 inches of fresh snow, a Class II avalanche occurred resulting in two fatalities. Other avalanches occur throughout each winter ski season, with most of these confined to out-of-bounds areas where damages are limited.

Residential areas subject to avalanche are located along Sandy Way at the base of steep slopes, most significantly in the area known as "the slide" above the 1200 block. The Shirley Lake Condominiums on Squaw Peak Way have been hit by small avalanches on several occasions. The Olympic Valley Fire Department may evacuate these areas during periods of known and extreme avalanche danger.

Vulnerability to and Impacts from Avalanche

Avalanches occur when the weight of new snow increases stress faster than strength of the snowpack develops, causing the slope to fail. Avalanche conditions develop more quickly on steeper slopes (located in the eastern portions of the County) and where wind-blown snow is common. Avalanche impacts vary, but include risk to property, injury, or death. Avalanches generally affect a few snowboarders, skiers, and hikers who venture into backcountry areas during or after winter storms. Avalanches cause road closures, and can damage structures and forests and has potential to bury pipeline facilities in streets or easements

Ski resorts, due to their steep slopes, abundant snow, snowpack, and the presence of people moving throughout the area, are prone to avalanches. Placer County identities the Olympic Valley area as vulnerable to avalanche activity.

Assets at Risk

All of those identified in Table O-4 with avalanche in the righthand column.

Dam Failure

Likelihood of Future Occurrence–Unlikely
Vulnerability–Medium

Hazard Profile and Problem Description

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States.

Location and Extent

Dam failure is a natural disaster from two perspectives. First, the inundation from released waters resulting from dam failure is related to naturally occurring floodwaters. Second, a total dam failure would most probably happen as a consequence of the natural disaster triggering the event, such as an earthquake. There is no scale with which to measure dam failure. However, Cal DWR Division of Safety of Dams (DOSD) assigns hazard ratings to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. Dams are classified in four categories that identify the potential hazard to life and property: Low, Significant, High, and Extremely High. These were discussed in more detail in Section 4.3.9 of the Base Plan.

While a dam may fill slowly with runoff from winter storms, a dam break has a very quick speed of onset. The duration of dam failure is generally not long – only as long as it takes to empty the reservoir of water the dam held back. The District would be affected for as long as the flood waters from the dam failure took to drain downstream.

The District also noted that, while inundation data was not available, the following dams are also a concern to the District. There are 7 surface water impoundments in Olympic Valley of about an acre or less in surface area contained behind small earthen or concrete dams. They are Hidden Lake, Gold Coast Snow Making Pond, Olympic Lady Pond, Shirley Lake, an old water supply reservoir on the South fork of Squaw Creek above the base area of the ski resort, and 2 ponds at the Resort at Squaw Creek golf course. These impoundments are known to overflow during extreme flood events such as the 1997 flood and would contribute a moderate surge of additional water if failure were to occur.

Past Occurrences

There has been no federal or state disaster declarations for dam failure in the County. The District noted no other dam failure occurrences that have affected the District.

Vulnerability to and Impacts from Dam Failure

Dam failure flooding would vary by community depending on which dam fails and the nature and extent of the dam failure and associated flooding. Impacts to the District from a dam failure flood could include loss of life and injury, flooding and damage to property and structures, damage to critical facilities and infrastructure, loss of natural resources, and all other flood related impacts. Additionally, mass evacuations and associated economic losses can also be significant.

Assets at Risk

Flooding and overwhelming of sewer facilities downstream. Potential damage to bridges and access on Highway 89.

Earthquake

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Hazard Profile and Problem Description

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, power, gas, communication, and transportation. Earthquakes may also cause collateral emergencies including dam and levee failures, seiches, hazmat incidents, fires, avalanches, and landslides. The degree of damage depends on many interrelated factors. Among these are: the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction.

Location and Extent

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales, as discussed in Section 4.3.11 of the Base Plan. Placer County itself is traversed by a series of northwest-trending faults, called the Foothill Fault Zone, that are related to the Sierra Nevada uplift. This was the source of Oroville's 1975 earthquake (and an earlier event in the 1940s). Subsequent research of these events led to the identification and naming of the zone and questions about the siting and design of the proposed Auburn Dam. Earthquakes on nearby fault segments in the zone could be the source of ground shaking in the Placer County Planning Area.

Although portions of western and eastern Placer County are located in a seismically active region, no known faults actually go through any of the cities or towns. However, the Bear Mountain and the Melones faults are situated approximately three to four miles west and east of the City of Auburn respectively. Earthquakes on these two faults would have the greatest potential for damaging buildings in Auburn, especially the unreinforced masonry structures in the older part of the city and homes built before 1960 without adequate anchorage of framing and foundations. Similar lower magnitude but nearby earthquakes are capable of producing comparable damages in other Placer County communities.

Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. The District is located in an area where some earthquakes of significant magnitude occur. Seismic shaking maps for the area show Placer County and the District fall within a moderate shake risk.

Past Occurrences

There have be no past federal or state disaster declarations from this hazard. The District noted no past occurrences of earthquakes or that affected the District in any meaningful way.

Vulnerability to and Impacts from Earthquake

The combination of plate tectonics and associated California coastal mountain range building geology generates earthquake as a result of the periodic release of tectonic stresses. Placer County lies in the center of the North American and Pacific tectonic plate activity. There have been earthquakes as a result of this activity in the historic past, and there will continue to be earthquakes in the future of the California north coastal mountain region.

Fault ruptures itself contributes very little to damage unless the structure or system element crosses the active fault; however, liquefaction can occur further from the source of the earthquake. In general, newer construction is more earthquake resistant than older construction due to enforcement of improved building codes. Manufactured buildings can be very susceptible to damage because their foundation systems are rarely braced for earthquake motions. Locally generated earthquake motions and associated liquefaction, even from very moderate events, tend to be more damaging to smaller buildings, especially those constructed of unreinforced masonry (URM) and soft story buildings.

The Uniform Building Code (UBC) identifies four seismic zones in the United States. The zones are numbered one through four, with Zone 4 representing the highest level of seismic hazard. The UBC establishes more stringent construction standards for areas within Zones 3 and 4. All of California lies within either Zone 3 or Zone 4. The OVFD/OVPSD is within the less hazardous Zone 3.

Impacts from earthquake in the District will vary depending on the fault that the earthquake occurs on, the depth of the earthquake strike, and the intensity of shaking. Large events could cause damages to infrastructure, critical facilities, residential and commercial properties, and possible injuries or loss of life.

The 2008 Draft Supplemental Environmental Impact Report for Water and Sewer Service Agreement for the resort at Squaw Creek: Phase II, indicates that six north-northwest, trending north-northeast dipping faults are located in the Olympic Valley watershed, four of which cross the valley floor. Of the four faults, only one has documented evidence of recent movement. However, because of the limited development in the area, and lack of un-reinforced masonry buildings, compared to a more urban setting, the OVFD/OVPSD service area would likely be of moderate vulnerability to damage from severe ground shaking.

Assets at Risk

All of those identified in Table O-4 with earthquake in the righthand column.

Flood: 1%/0.2% Annual Chance

Likelihood of Future Occurrence–Occasional/Unlikely
Vulnerability–High

Hazard Profile and Problem Description

This hazard analyzes the FEMA DFIRM 1% and 0.2% annual chance floods. These tend to be the larger floods that can occur in the County or in the District, and have caused damages in the past. Flooding is a significant problem in Placer County and the District. Historically, the District has been at risk to flooding primarily during the winter and spring months when river systems in the County swell with heavy rainfall and snowmelt runoff. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage.

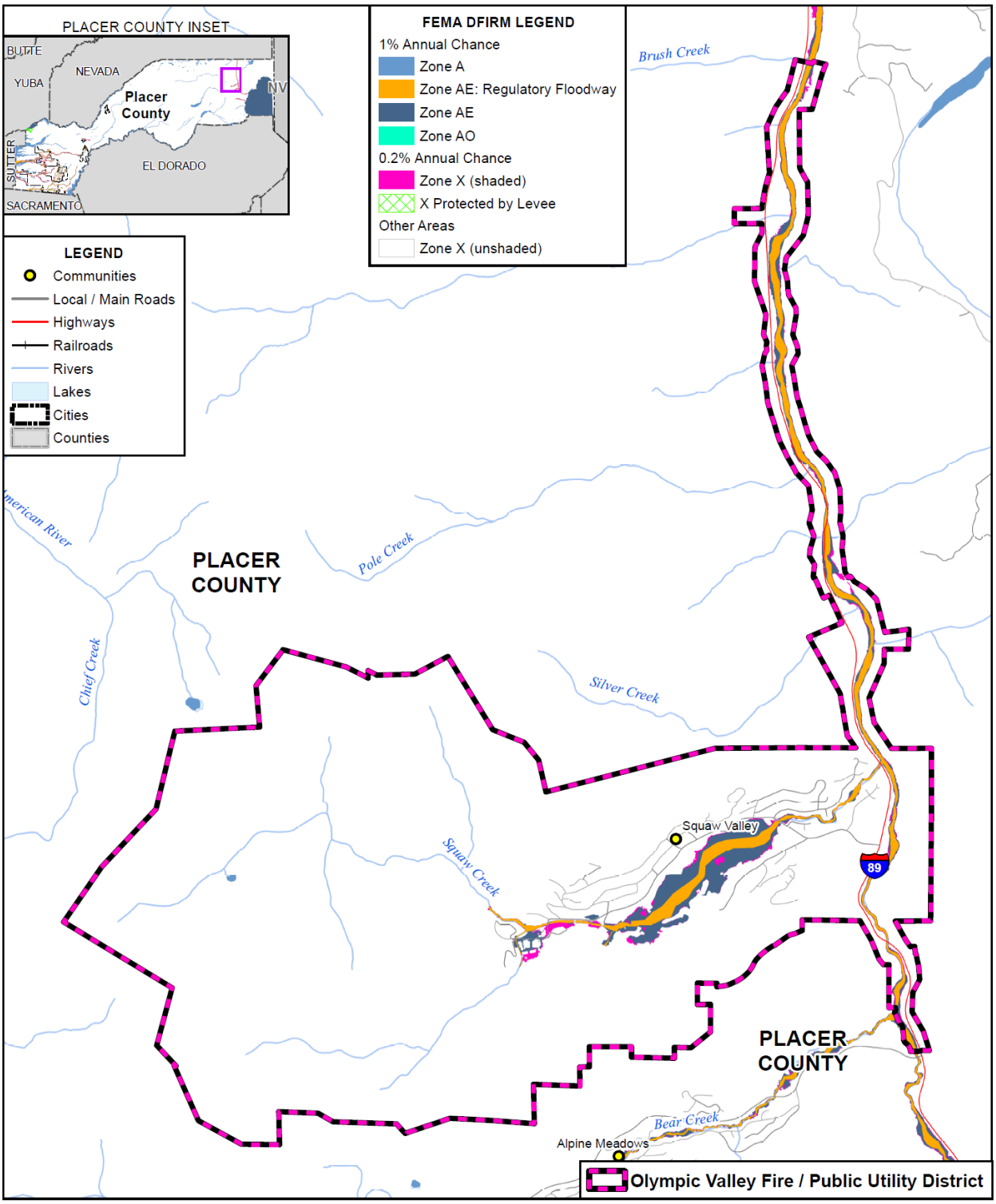
As previously described in Section 4.3.12 of the Base Plan, the Placer County Planning Area and the OVFD/OVPSD have been subject to historical flooding.

Location and Extent

The Olympic Valley watershed is a small subalpine and alpine watershed covering an area of approximately 8.2 square miles. It is characterized by steep, mountainous slopes draining to and through the limited valley area. The watershed includes the drainages of the North Fork, the South Fork, and the main stem of Squaw Creek. Watershed elevations range from approximately 6,200 feet on the valley floor up to 9,000 feet on the highest peaks adjacent to the valley. Squaw Creek and its tributaries are the only significant surface water bodies in Olympic Valley. The two main forks converge in an area known as the confluence at the western end of the valley. The confluence is a wide gravel-filled portion of Squaw Creek that has been altered due to gravel mining. The primary source of Squaw Creek's annual flow is snowmelt. The snowmelt peaks in the spring and often continues through July and August when it starts to dry up.

The OVFD/OVPSD has areas located in the 1% annual chance floodplain. This is seen in Figure O-2.

Figure O-2 OVFD/OVPSD – FEMA DFIRM Flood Zones



Data Source: FEMA DFIRM 11/2/2018, Placer County GIS, Cal-Atlas, NVBLM; Map Date: 2021.

Table O-6 details the DFIRM mapped flood zones within the 1% annual chance flood zone as well as other flood zones located within the District.

Table O-6 OVFD/OVPSD – DFIRM Flood Hazard Zones

Flood Zone	Description	Flood Zone Present in the District
A	Areas subject to inundation by the 1% annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.	X
AE	Areas subject to inundation by the 1% annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.	X
AE – Regulatory Floodway	Areas subject to inundation by the 1% annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply. Different from AE in that it adds the water course and adjacent lands that must be reserved in order to discharge the base flood without increasing the water surface elevation by more than one foot.	
AH	An area inundated by 1% annual chance flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet	
AO	Areas subject to inundation by 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between one and three feet	
Shaded X	500-year flood the areas between the limits of the 1% annual chance flood and the 0.2-percent-annual-chance (or 500-year) flood	
X Protected by Levee	An area determined to be outside the 500-year flood and protected by levee from 100-year flood	
X	Areas outside of known floodplains.	X

Source: FEMA

Additionally, flood extents can generally be measured in volume, velocity, and depths of flooding. Expected flood depths in the District vary, depending on the nature and extent of a flood event; specific depths are unknown. Flood durations in the District tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Flooding in the District tends to have a shorter speed of onset, due to the amount of water that flows through the District.

Past Occurrences

A list of state and federal disaster declarations for Placer County from flooding is shown on Table O-7. These events also likely affected the District to some degree.

Table O-7 Placer County – State and Federal Disaster Declarations from Flood 1950-2020

Disaster Type	Federal Declarations		State Declarations	
	Count	Years	Count	Years
Flood (including heavy rains and storms)	16	1950, 1955, 1958 (twice), 1962, 1963, 1969, 1973, 1980, 1983, 1986, 1995 (twice), 1997, 2008, 2017	13	1955, 1958, 1962, 1964, 1969, 1983, 1986, 1995 (twice), 1997, 2006 (twice), 2017

Source: Cal OES, FEMA

Areas impacted by previous flooding include the North and South forks of Squaw Creek, through the Squaw Valley Ski Area and commercial property, including PlumpJack (Squaw Valley Inn) and Squaw Valley Lodge, and running the entire length of Olympic Valley to its merger with the Truckee River.

A flood event impacting the District occurred in **January of 2006**. Heavy rains (estimated at over 10 inches in three days) were the primary cause of this flood event. This flooding of Squaw Creek (estimated as a 50-year event) caused erosion, inflow to sewer system, power failures, road closures (from mudslides), and impacts to local businesses cut off by the flooding. Unlike the **1997** flood, there was no damage to the District's facilities or infrastructure.

The District noted the **January 2017** flood caused significant amount of work to protect infrastructure and keep up with flood water. Flood event resulted in overtime and equipment use.

Vulnerability to and Impacts from Flood

Floods have been a part of the District's historical past and will continue to be so in the future. During winter months, long periods of precipitation and the timing of that precipitation are critical in determining the threat of flood, and these characteristics further dictate the potential for widespread structural and property damages. Predominantly, the effects of flooding are generally confined to areas near the waterways of the County. As waterways grow in size from local drainages, so grows the threat of flood and dimensions of the threat. This threatens structures in the floodplain. Structures can also be damaged from trees falling as a result of water-saturated soils. Electrical power outages happen, and the interruption of power causes major problems. Loss of power is usually a precursor to closure of governmental offices and community businesses. Roads can be damaged and closed, causing safety and evacuation issues. People may be swept away in floodwaters, causing injuries or deaths.

Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. Floods can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs. Floodwaters can transport large objects downstream which can damage or remove stationary structures. Ground saturation can result in instability, collapse, or other damage. Objects can also be buried or destroyed through sediment deposition. Floodwaters can also break utility lines and interrupt services. Standing water can cause damage to crops, roads, foundations, and electrical circuits. Direct impacts, such as drowning, can be limited with adequate warning and public education about what

to do during floods. Other problems connected with flooding and storm water runoff include erosion, sedimentation, degradation of water quality, loss of environmental resources, and economic impacts.

Flooding and soil erosion due to heavy rains and snow runoff have been a historical problem. Abundant snowfall in the mountains combined with rain and steep terrain can mean rapid runoff and flooding. Water flow can be high in peak runoff periods with historical downstream flooding. The primary impacts from flooding within the District include damage to roads, utilities, bridges; and flooding of homes, businesses and critical facilities. Historically, mud slides and washouts associated with flooding caused the most damages within the District. The south fork of the Squaw Creek is generally impacted the most. Road closures create difficulties in providing emergency services to areas cut off by flooding and limit the area's ability to evacuate.

Assets at Risk

All of those identified in Table O-4 with flood in the righthand column.

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

Flooding occurs in areas other than the FEMA mapped 1% and 0.2% annual chance floodplains. Flooding may be from drainages not studied by FEMA, lack of or inadequate drainage infrastructure, or inadequate maintenance. Localized, stormwater flooding occurs throughout the County during the rainy season from November through April. Prolonged heavy rainfall contributes to a large volume of runoff resulting in high peak flows of moderate duration.

Location and Extent

The OVFD/OVPSD is subject to localized flooding throughout the District. Flood extents are usually measured in areas affected, velocity of flooding, and depths of flooding. Expected flood depths in the District vary by location. Flood durations in the District tend to be short to medium term, or until either the storm drainage system can catch up or flood waters move downstream. Localized flooding in the District tends to have a shorter speed of onset, especially when antecedent rainfall has soaked the ground and reduced its capacity to absorb additional moisture.

The District tracks localized flooding areas. localized flood areas identified by the OVFD/OVPSD are summarized in Table O-8.

Table O-8 OVFD/OVPSD – List of Localized Flooding Problem Areas

Road Name	Flooding	Pavement Deterioration	Washouts	High Water/ Creek Crossing	Landslides/ Mudslides	Debris	Downed Trees
Squaw Valley Road 2 locations	X			Tributary of Squaw Creek		X	
Squaw Peak Road	X			South Fork Squaw Creek			

Source: OVFD/OVPSD

Past Occurrences

There have been no federal or state disaster declarations in the County due to localized flooding. The District noted no past occurrences of localized flooding since 2016.

Vulnerability to and Impacts from Localized Flooding

Historically, much of the growth in the District and County has occurred adjacent to streams, resulting in significant damages to property, and losses from disruption of community activities when the streams overflow. Additional development in the watersheds of these streams affects both the frequency and duration of damaging floods through an increase in stormwater runoff.

Primary concerns associated with stormwater flooding include life safety issues, and impacts to property and to infrastructure that provides a means of ingress and egress throughout the community. Ground saturation can result in instability, collapse, or other damage to trees, structures, roadways and other critical infrastructure. Objects can also be buried or destroyed through sediment deposition. Floodwaters can break utility lines and interrupt services. Standing water can cause damage to crops, roads, and foundations. Other problems connected with flooding and stormwater runoff include erosion, sedimentation, degradation of water quality, losses of environmental resources, and certain health hazards.

Assets at Risk

All of those identified in Table O-4 with flood in the righthand column.

Landslide, Mudslide, Debris Flows

Likelihood of Future Occurrence–Occasional
Vulnerability–Medium

Hazard Profile and Problem Description

According to the California Geological Survey, landslides refer to a wide variety of processes that result in the perceptible downward and outward movement of soil, rock, and vegetation under gravitational influence. Common names for landslide types include slump, rockslide, debris slide, lateral spreading,

debris avalanche, earth flow, and soil creep. Landslides may be triggered by both natural and human-induced changes in the environment that result in slope instability.

The susceptibility of an area to landslides depends on many variables including steepness of slope, type of slope material, structure and physical properties of materials, water content, amount of vegetation, and proximity to areas undergoing rapid erosion or changes caused by human activities. These activities include mining, construction, and changes to surface drainage areas. Landslide events can be determined by the composition of materials and the speed of movement. A rockfall is dry and fast while a debris flow is wet and fast. Regardless of the speed of the slide, the materials within the slide, or the amount of water present in the movement, landslides are a serious natural hazard.

Debris flows, can also occur in some areas of the County and the District. These debris flows generally occur in the immediate vicinity of existing drainage swales or steep ravines. Debris flows occur when near surface soil in or near steeply sloping drainage swales becomes saturated during unusually heavy precipitation and begins to flow downslope at a rapid rate. Debris flows are also common during the rainy season in post fire areas.

Location and Extent

Landslides, mudslides, and debris flows can affect certain areas of the District. The CGS has estimated that the risk varies across the District and has created maps showing risk variance. This risk variance falls into multiple categories. These are discussed in Section 4.3.14 of the Base Plan. According to the District Planning Team, risk varies within the District range from moderate to high. The speed of onset of landslide is often short, especially in post-wildfire burn scar areas, but it can also take years for a slope to fail. Landslide duration is usually short, though digging out and repairing landslide areas can take some time.

Past Occurrences

There have been no federal or state disaster declarations in the County from landslide. Given the geology, climate, and terrain of the District, landslides can be a significant concern. Notable landslides of record include the landslides occurring along the Truckee River, Squaw Creek and Bear Creek rivers associated with the 1997 flood event. These include the Wayne Road, Sandy Way, and Navajo Court landslides.

The Sandy Way mudslide area has had several significant releases – the first in about 1983 and the second in 1997. Following the 1983 event, the portion of the drainage just above Sandy Way was widened and deepened somewhat and a larger culvert installed. Debris was removed from the areas downhill of Sandy Way, but the stream channel was not altered significantly nor were improvements constructed. Following the 1997 event (which accompanied significant and widespread flooding and mudslides/debris flows in other areas) the Sandy Way improvements were cleaned out, with little change and without installation of further improvements. The area remains questionable today – it will very likely release again, given similar rainfall intensity and duration.

Vulnerability to and Impacts from Landslide

Although landslides are primarily associated with slopes greater than 15 percent, they can also occur in relatively flat areas and as cut-and-fill failures, river bluff failures, lateral spreading landslides, collapse of

wine-waste piles, failures associated with quarries, and open-pit mines. Landslides may be triggered by both natural- and human-caused activity.

The District has identified several areas prone to landslides that were discussed in the Past Occurrences section above. Impacts in the District may be to structures, infrastructure, and to life safety

Assets at Risk

All of those identified in Table O-4 with landslide in the righthand column.

Severe Weather: Freeze and Snow

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Hazard Profile and Problem Description

According to the NWS and the WRCC, winter snow storms can include heavy snow, ice, and blizzard conditions. Heavy snow can immobilize a region, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can collapse roofs and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. The cost of snow removal, damage repair, and business losses can have a tremendous impact on cities and towns.

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days until the damage can be repaired. Power outages can have a significant impact on communities, especially critical facilities such as public utilities. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians.

Some winter storms are accompanied by strong winds, creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chills. Strong winds accompanying these intense storms and cold fronts can knock down trees, utility poles, and power lines. Blowing snow can reduce visibility to only a few feet in areas where there are no trees or buildings. Serious vehicle accidents with injuries and deaths can result. Freezing temperatures can cause significant damage to the agricultural industry.

Location and Extent

Freeze and snow are regional issues, meaning the entire District is at risk to cold weather and freeze events. While there is no scale (i.e. Richter, Enhanced Fujita) to measure the effects of freeze, the WRCC reports that in a typical year, minimum temperatures fall below 32°F on 209.0 days with 0.4 days falling below 0°F in eastern Placer County. Snowfall is measured in depths, and the WRCC reports that average snowfall on the eastern side of the County is 190.7 inches. Freeze and snow has a slow onset and can be generally be predicted in advance for the County. Freeze events can last for hours (in a cold overnight), or for days to weeks at a time. Snow event can last for hours or days, and the snow stays all winter in the eastern portion of the County, often with significant snow depths.

Past Occurrences

There has been no federal and one state disaster declarations in the County for freeze and snow, as shown on Table O-9.

Table O-9 Placer County – State and Federal Disaster Declarations from Freeze and Snow 1950-2020

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Freeze	1	1972	0	–

Source: Cal OES, FEMA

The District noted that cold and freeze is a regional phenomenon; events that affected the County also affected the District. Those past occurrences were shown in the Base Plan in Section 4.3.3.

According to the District, major winter storms have routinely cut off transportation routes in the District for hours (March 2007) to over a week (back in the 1950s), stranding thousands and causing a major impact to services and supplies.

Vulnerability to and Impacts from Severe Weather: Freeze and Snow

The District experiences temperatures below 32 degrees during the winter months. Freeze can cause injury or loss of life to residents of the District. While it is rare for buildings to be affected directly by freeze, damages to pipes that feed building can be damaged during periods of extreme cold. Freeze and snow can occasionally be accompanied by high winds, which can cause downed trees and power lines, power outages, accidents, and road closures. Transportation networks, communications, and utilities infrastructure are the most vulnerable physical assets to impacts of severe winter weather in the County.

The District noted that deep freezes with no snow cover can go deep enough into the ground to freeze pipelines and facilities. Heavy snow can limit access to pipeline or facilities if there were issues going at the same time as heavy snow.

Extreme Cold and Power Shortage/Power Failure

The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the Department of Energy, major blackouts are on the upswing. Incredibly, over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. In addition to blackouts, brownouts can occur. A brownout is an intentional or unintentional drop in voltage in an electrical power supply system. Intentional brownouts are used for load reduction in an emergency. Electric power disruptions can be generally grouped into two categories: intentional and unintentional. More information on types of power disruptions can be found in Section 4.3.2 of the Base Plan.

Assets at Risk

All of those identified in Table O-4 with freeze or snow in the righthand column.

Severe Weather: Heavy Rains and Storms (Hail, Lightning)

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Hazard Profile and Problem Description

Storms in the District occur annually and are generally characterized by heavy rain often accompanied by strong winds and sometimes lightning and hail. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado. Heavy precipitation in the District falls mainly in the fall, winter, and spring months.

Location and Extent

Heavy rain events occur on a regional basis. Rains and storms can occur in any location of the District. All portions of the District are at risk to heavy rains. Most of the severe rains occur during the fall, winter, and spring months. There is no scale by which heavy rains and severe storms are measured. Magnitude of storms is measured often in rainfall and damages. The speed of onset of heavy rains can be short, but accurate weather prediction mechanisms often let the public know of upcoming events. Duration of severe storms in California, Placer County, and the District can range from minutes to hours to days. Information on precipitation extremes can be found in Section 4.3.4 of the Base Plan.

Past Occurrences

There have been past disaster declarations from heavy rains and storms, which were discussed in Past Occurrences of the flood section above. According to historical hazard data, severe weather, including heavy rains and storms, is an annual occurrence in the District. This is the cause of many of the federal disaster declarations related to flooding. Protection of District facilities can cause significant overtime and a chance of damages to facilities.

Vulnerability to and Impacts from Heavy Rain and Storms

Heavy rain and severe storms are the most frequent type of severe weather occurrences in the District. These events can cause localized flooding. Elongated events, or events that occur during times where the ground is already saturated can cause 1% and 0.2% annual chance flooding. Wind often accompanies these storms and has caused damage in the past. Hail and lightning are rare in the District.

Actual damage associated with the effects of severe weather include impacts to property, critical facilities (such as utilities), and life safety. Heavy rains and storms often result in localized flooding creating significant issues. Roads can become impassable and ground saturation can result in instability, collapse,

or other damage to trees, structures, roadways and other critical infrastructure. Floodwaters and downed trees can break utilities and interrupt services.

During periods of heavy rains and storms, power outages can occur. These power outages can affect pumping stations and lift stations that help alleviate flooding.

Heavy rains and severe thunderstorms have occurred frequently in Squaw Valley and are likely to occur annually. These events are known to cause localized flooding, erosion, and damage to utility infrastructure. High winds are associated with frequent power loss and although the District maintains 3 emergency generators, personnel responding are often confronted with travel delay due to road closures.

Assets at Risk

All of those identified in Table O-4 with weather or flood in the righthand column.

Tree Mortality

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Hazard Profile and Problem Description

One of the many vulnerabilities of drought in Placer County is the increased risk of widespread tree mortality events that pose hazards to people, homes, and community infrastructure, create a regional economic burden to mitigate, and contribute to future fuel loads in forests surrounding communities. During extended drought, tree mortality is driven by a build-up in endemic bark beetle populations and exacerbated by latent populations of a suite of native insects and disease. Non-native forest pests (insects and/or pathogens) can also contribute to tree mortality events.

Location and Extent

Onset of tree mortality events can be relatively fast; however conditions – such as high stand densities – that lead to tree mortality accumulate slowly over time. Duration of tree mortality is lengthy, as once the tree dies, it remains in place until removed by human activity, wildfire, or breakdown of the wood by nature. Many areas in Placer County have seen increases in tree mortality. The County has mapped these areas, and that map was shown in Section 4.3.18 of the Base Plan. Using a color legend, the map provided by CAL FIRE shows a scale of:

- Deep burgundy depicting areas with more than 40 dead trees per acre
- Red depicting 15 - 40 dead trees per acre
- Orange depicting 5 -15 dead trees per acre
- Yellow depicting 5 or less dead trees per acre

In the past decade, mortality has increased in the eastern portion of Placer County. During the 2012-2018 drought, the state of California Tree Mortality Task force designated multiple Tier 1 and Tier 2 High Hazard Zones where tree morality posed an elevated risk to human health, properties, and resource values. A number of Placer County areas were designated during this event and the majority of Placer County

watersheds were designated as Tier 2 high hazard zones because of the significant levels of tree mortality, along with numerous Tier 1 High hazard "hot spots". A map of these areas was shown in in Section 4.3.18 of the Base Plan.

Past Occurrences

There have been no state or federal disasters in the County related directly to tree mortality, though it has most likely contributed to the intensity of past wildfires in the County. Those events are shown in the Past Occurrences section of Wildfire below. In 2015, then-Governor Edmund G. Brown Jr. proclaimed a state of emergency due to the extreme hazard of the dead and dying trees. Following the proclamation, 10 counties were determined to be most affected, which included Placer County. Placer County proclaimed a local emergency due to tree mortality conditions on Dec. 8, 2015. No events of past tree mortality have affected the District.

Vulnerability to and Impacts from Tree Mortality

Placer County is unique in that many residential and business areas of the community are in the wildland urban interface/intermix with the forest. Trees in these interface/intermix areas are particularly vulnerable to insect and/or drought driven mortality because of the additional stressors that urban environments impose on trees (i.e. soil compaction, altered hydrology, physical damage, heat islands etc.). This exacerbates the occurrence of tree mortality within the populated settings of the County.

Dead trees are a hazard to the general public and forest visitors, but the risk of injury, death, property damage or infrastructure damages varies depending how the hazard interacts with potential targets. Dead trees within the wildland urban intermix or wildland urban interface or urban areas therefore pose a greater risk to due to their proximity to residents, businesses, and road, power, and communication infrastructure.

Dead trees may fall or deteriorate in their entirety or in part – either mechanism has the potential for injury, death, or inflicting severe damage to targets. As the time since tree mortality increases, so does the deterioration of wood and the potential for tree failure.

The trees within the District are unnaturally dense due to fire suppression and previous logging practices, the area is showing signs of inter-tree competition and significant widespread pathogen outbreaks including tree fungal infections in the firs, and heavy mistletoe infections in lodgepole pine and Jeffery pine. Historically, this forest was open and 'park-like' with significantly fewer trees and dominated by large diameter pine species.

Assets at Risk

All of those identified in Table O-4 with wildfire in the righthand column.

Wildfire

Likelihood of Future Occurrence–Highly Likely
Vulnerability–High

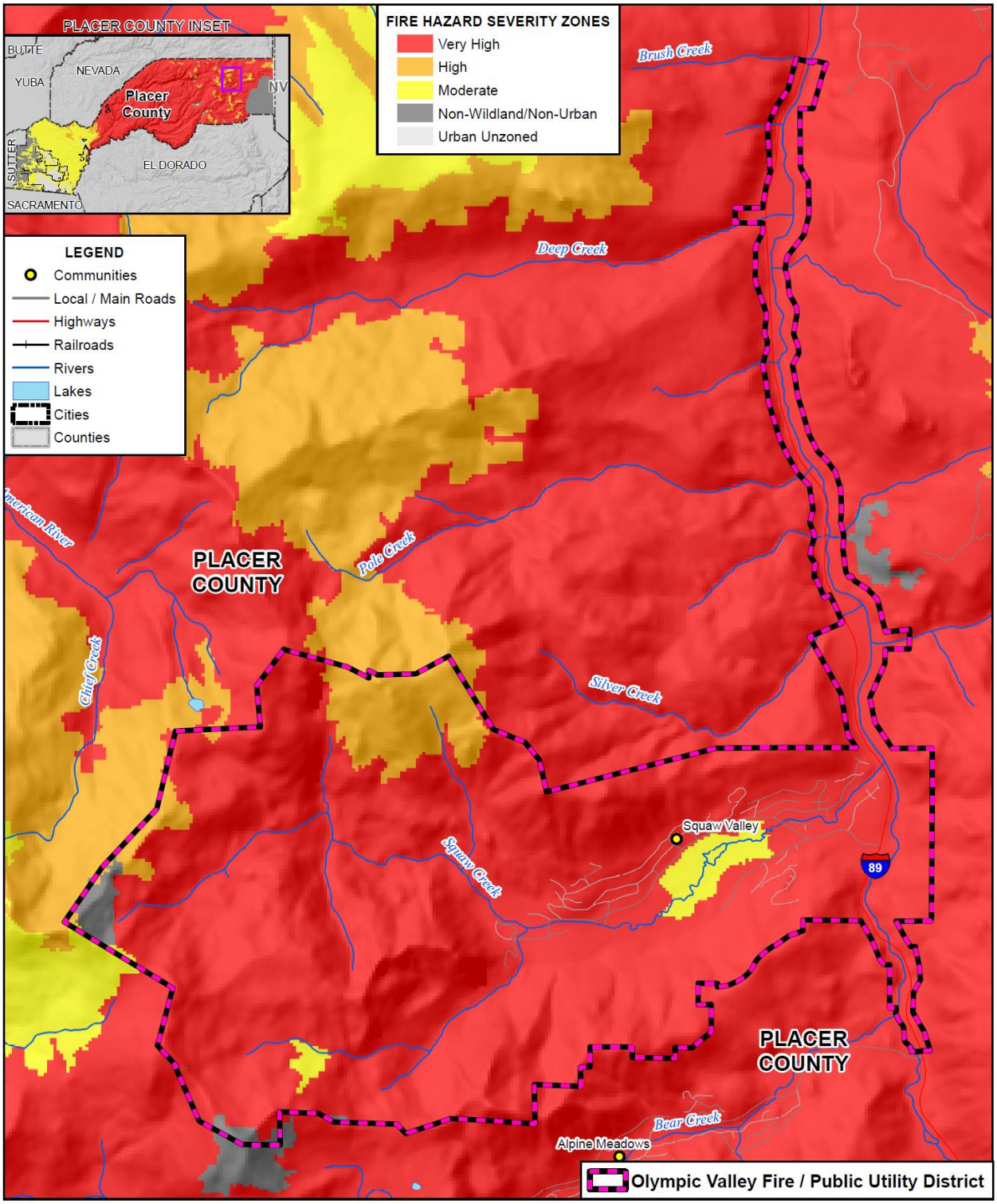
Hazard Profile and Problem Description

Wildland fire and the risk of a conflagration is an ongoing concern for the OVFD/OVPSD. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of the ecosystem. Wildland fires affect grass, forest, and brushlands, as well as any structures located within them. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months; however, in recent years, the risk of wildfire has become a year around concern. Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. While wildfire risk has predominantly been associated with more remote forested areas and wildland urban interface (WUI) areas, significant wildfires can also occur in more populated, urban areas

Location and Extent

Wildfire can affect all areas of the District. CAL FIRE has estimated that the risk varies across the District and has created maps showing risk variance. Following the methodology described in Section 4.3.19 of the Base Plan, wildfire maps for the OVFD/OVPSD were created. Figure O-3 shows the CAL FIRE FHSZ in the District. As shown on the maps, FHSZs in the District range from High to Very High.

Figure O-3 OVFD/OVPSD – Fire Hazard Severity Zones



Data Source: Cal-Fire (Draft 09/2007 - c31fhszl06_1, Adopted 11/2007 - fhszs06_3_31, Recommended 12/2008 - c31fhszl06_3), Placer County GIS, Cal-Atlas, NVBLM; Map Date: 2021.

Wildfires tend to be measured in structure damages, injuries, and loss of life as well as on acres burned. Fires can have a quick speed of onset, especially during periods of drought or during hot dry summer months. Fires can burn for a short period of time, or may have durations lasting for a week or more.

Past Occurrences

There has been five state and six federal disaster declarations for Placer County from fire. These can be seen in Table O-10.

Table O-10 Placer County – State and Federal Disaster Declarations Summary 1950-2020

Disaster Type	State Declarations		Federal Declarations	
	Count	Years	Count	Years
Fire	5	1961, 1965, 1973, 1987, 2010	6	2002, 2004, 2008, 2009, 2014 (twice)

Source: Cal OES, FEMA

The most recent major wildfires to impact the District were the Angora and Washoe Fires in 2007, in which over 260 homes were lost, and the 2014 King Fire. The king Fire grew to over 97,000 acres and burned within about 6 miles of the District boundary. It was particularly concerning because of the extreme fire behavior exhibited - including a ten mile run over the course of a few hours in the middle of the night – and it actually caused fire managers and scientists studying fire behavior to reconsider whether accepted norms of fire behavior needed to be reexamined. These are only a few examples of recent, larger wildfire events in the Lake Tahoe Basin and eastern Placer County. The District noted no other wildfires since 2016.

Vulnerability to and Impacts from Wildfire

Risk and vulnerability to the Placer County Planning Area and the District from wildfire is of significant concern, with some areas of the Planning Area being at greater risk than others as described further in this section. High fuel loads in the Planning Area, combined with a large built environment and population, create the potential for both natural and human-caused fires that can result in loss of life and property. These factors, combined with natural weather conditions common to the area, including periods of drought, high temperatures, low relative humidity, and periodic winds, can result in frequent and potentially catastrophic fires. During the nearly year around fire season, the dry vegetation and hot and sometimes windy weather results in an increase in the number of ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire. As development continues throughout the County and the District, especially in these interface areas, the risk and vulnerability to wildfires will likely increase.

Potential impacts from wildfire include loss of life and injuries; damage to structures and other improvements, natural and cultural resources, croplands, and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the District. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the District by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the District; smoke and air pollution from wildfires can be a severe health hazard.

As more people live in the area on a full-time basis and recreational uses and accompanying impacts increase, there will be more human-caused wildfire starts each year. Of greater concern is the increased number and value of homes developed within the WUI areas of the District. This adds greatly to the complexity and cost of fighting these fires – the 'values at risk' continue to escalate.

Olympic Valley has only one means of ingress and egress as a result of the configuration of the Valley, this will never change. Furthermore, a single road connects Olympic Valley to adjoining communities - California State Route 89 - this can never change because of the configuration of the Truckee River canyon. Evacuating the community or getting a large number of fire suppression resources to the Valley over a single road clogged with panicked residents trying to flee a wildland fire of significant size would be a daunting challenge indeed. Because of the steep terrain and dense forest immediately adjacent to the roadway, it is likely that these routes would have to be closed during a major event, stranding many people - including many visitors - away from their families and homes. To date there has been no loss of life attributed to the limited evacuation routes, but it is likely only a matter of time before people are cut off and trapped by a major fire event. The Valley has been isolated for days at a time by simultaneous avalanche and mudslide events on State Route 89.

Forest overgrowth due to the efficiency of modern firefighting techniques and to society's current election to limit forest thinning and harvesting is a serious problem. If wildfire does not impact the forest first, native insects will eventually kill millions of trees. Explosions in insect populations usually start during a drought, when the lack of water combined with too many trees per acre render the trees too weak to fight off the insect attacks. Without a change in management practices on public lands, there is little hope of avoiding significant tree mortality similar to that experienced in other mountain environments in Southern California and Colorado.

Although the physical damages and casualties arising from large fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time.

Public Safety Power Shutoff (PSPS)

A new intentional disruption type of power shortage/failure event has recently occurred in California. In recent years, several wildfires have started as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California's three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), are coordinating to prepare all Californians for the threat of wildfires and power outages during times of extreme weather. To help protect customers and communities during extreme weather events, electric power may be shut off for public safety in an effort to prevent a wildfire. This is called a PSPS. More information on PSPS criteria can be found in Section 4.3.2 of the Base Plan.

Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E and Liberty Utilities to initiate PSPSs which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended

period. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

Assets at Risk

All of those identified in Table O-4 with wildfire in the righthand column.

O.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

O.6.1. Regulatory Mitigation Capabilities

Table O-11 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the OVFD/OVPSD.

Table O-11 OVFD/OVPSD Regulatory Mitigation Capabilities

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan/General Plan	1992 1994	Water& Sewer System Master Plans are being updated now and will be complete in 2022
Capital Improvements Plan	2007	Update as part of above master plan work
Economic Development Plan	N	Placer Co
Local Emergency Operations Plan	2016	
Continuity of Operations Plan	N	Water System Operations Plan is 80% complete Sewer System Management Plan 2020
Transportation Plan	NA	Placer Co
Stormwater Management Plan/Program	NA	Placer Co
Engineering Studies for Streams	2007	Placer County funded study by PWA
Community Wildfire Protection Plan	N	Defensible Space Program see 2010 plan description
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	N	Placer Co
Building Code, Permitting, and Inspections	**Y/N**	**Are codes adequately enforced?**
Building Code	NA	Version/Year: Placer Co
Building Code Effectiveness Grading Schedule (BCEGS) Score	NA	Score: Placer Co

Fire department ISO rating:	Y	Rating: 2 in Valley hydrant areas, 2Y in river corridor
Site plan review requirements	Y	
Land Use Planning and Ordinances	**Y/N**	**Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?**
Zoning ordinance	Y	Placer Co
Subdivision ordinance	N	Placer Co
Floodplain ordinance	NA	Placer Co
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N	Placer Co
Flood insurance rate maps	N	Placer Co
Elevation Certificates	NA	Placer Co
Acquisition of land for open space and public recreation uses	N	Placer Co
Erosion or sediment control program	N	Placer Co
Other		District Ordinances including Water Code, Sewer Code, and Fire Prevention Code
How can these capabilities be expanded and improved to reduce risk?		
The District will look at expanding our ordinances and partnering with other agencies (example we signed MOU w Placer County for Haz-Veg abatement)		

Source: OVFD/OVPSD

Olympic Valley Groundwater Management Plan, 2007

The Olympic Valley Groundwater Management Plan summarizes the plan process, existing groundwater and surface water conditions, and explores options for providing a sustainable water supply for current and future beneficial uses. An update of the Olympic Valley Groundwater Management Plan will be completed in 2016.

Codes and Ordinances

Avalanche

Placer County's avalanche management program defines Potential Avalanche Hazard Areas (PAHAs) where the minimum probability of avalanche occurrence is 1 in 100 per year or where avalanche damage has already occurred. According to the Placer County Avalanche Ordinance the following information must be disclosed in PAHAs:

- Identification that a structure is within a PAHA;
- A warning that avalanche control work is conducted in the area and avalanche warnings will be provided as feasible; and
- Identification of sources that provide weather information and general information on avalanches.

In addition, the County limits construction as necessary in PAHAs and will not issue a building permit for construction in a PAHA without certifying that the structure will be safe under the anticipated snow loads and conditions of an avalanche.

Olympic Valley Public Services District Codes and Permits

OVFD/OVPSD has enacted several codes:

- Water Code
- Sanitary Sewer Code
- Fire Prevention Code

In addition, the District has permit requirements specific to:

- Residential Construction
- Commercial Construction
- Multiple Dwelling Units
- Temporary Discharge into Sewer
- Temporary Fire Hydrant Connection

O.6.2. Administrative/Technical Mitigation Capabilities

The District is governed by a five-member Board of Directors elected to four-year terms. Registered voters within District boundaries are eligible to run for office. The Board of Directors approves District codes and policies. Placer County provides the District with the resources of a planner/engineer with knowledge of land development and management practices. The District also utilizes the services of a building official and GIS staff from Placer County. The District also participates in the County's teleminder system for people residing with District boundaries. Table O-12 identifies the District department(s) responsible for activities related to mitigation and loss prevention in OVFD/OVPSD.

Table O-12 OVFD/OVPSD 's Administrative and Technical Mitigation Capabilities

Administration	Y/N	Describe capability Is coordination effective?
Planning Commission	N	Placer Co
Mitigation Planning Committee	N	Placer Co
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Y	Defensible Space program
Mutual aid agreements	Y	Tahoe Truckee Area Emergency Contingency Plan Fire Dept. Mutual Aid Agreement
Other		
Staff	**Y/N FT/PT**	**Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?**
Chief Building Official	N	Placer Co
Floodplain Administrator	N	Placer Co
Emergency Manager	N	
Community Planner	N	Placer Co
Civil Engineer	Y	General Manager Mike Geary

GIS Coordinator	Y	District Engineer Dave Hunt
Other		
Technical		
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Everbridge
Hazard data and information	N	Placer Co
Grant writing	Y	Staff
Hazus analysis	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
Continued updates to the capabilities identified above help improve the response and prevention of identified risks.		

Source: OVFD/OVPSD

O.6.3. Fiscal Mitigation Capabilities

Table O-13 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table O-13 OVFD/OVPSD 's Fiscal Mitigation Capabilities

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	Squaw Creek Embankment Reinforcement Project
Authority to levy taxes for specific purposes	N	Restricted by Prop 218
Fees for water, sewer, gas, or electric services	Y	Water and Sewer Asset Replacement Plan
Impact fees for new development	Y	Fire Department Apparatus Asset Replacement Plan
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	Y	
Incur debt through private activities	N	
Community Development Block Grant	N	
Other federal funding programs	Y	
State funding programs	Y	Member of Tahoe Sierra Integrated Water Management Plan
Other		
How can these capabilities be expanded and improved to reduce risk?		
Identifying future funding opportunities will enable the District to pursue some of the mitigation projects that have been identified.		

Source: OVFD/OVPSD

O.6.4. Mitigation Education, Outreach, and Partnerships

Table O-14 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information.

Table O-14 OVFD/OVPSD 's Mitigation Education, Outreach, and Partnerships

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	N	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Biannual newsletter
Natural disaster or safety related school programs	N	Not known
StormReady certification	N	
Firewise Communities certification	Y	
Public-private partnership initiatives addressing disaster-related issues	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
The District is completing a Community Wildfire Preparedness Plan (CWPP) to identify and prioritize programs such as those noted above, expected completion date of April 2022.		

Source: OVFD/OVPSD

The District attempts to work with the local community and solicit public comment and involvement in District programs, system improvements and upgrades. Considerable public outreach and participation was extended during the development and adoption of the Olympic Valley Groundwater Management Plan, preparation and certification of a Supple-mental EIR for the Resort at Squaw Creek's Phase II Expansion, as well as numerous system upgrade projects.

O.6.5. Other Mitigation Efforts

The District has many other completed or ongoing mitigation efforts that include the following:

- In 2016 the District as part of a project to produce an Operations Plan updated the Emergency Response Plan
- In 2020 the District completed and adopted a Sewer System Management Plan
- In 2015 the District as part of the Village Master Plan completed a Water Supply Assessment funded by the developer. The WSA looked at projected growth over the next 25 years and modeled impacts to the Olympic Valley Aquifer during multiple drought years. The study shows the Olympic Valley Aquifer is not presently in overdraft and should sustain the growth proposed.

- The District is presently working on a study funded by DWR titled Redundant Water Supply Preferred Alternative Analysis. This study lays the groundwork for a system intertie with the Truckee Donner PUD & Northstar Community Services Districts

Squaw Creek Embankment Reinforcement Project: As a result of bank erosion from a 1986 flood event, the Olympic Valley sewer export line that runs adjacent to Squaw Creek was being threatened. In 1989, the bank was reinforced using boulder rip rap. In 2000, the District completed a $400,000 plus project to armor a 400 foot reach of Squaw Creek where the 1997 flood threatened the Olympic Valley Interceptor sewer main, a pipeline that carries 100 percent of the valley's effluent.

Defensible Space Program: The OVFD/OVPSD has had a defensible space program for the past 20 years. This program entails a physical inspection of every property in the District's jurisdiction for compliance with California's defensible space laws. Properties that are not in compliance at the time of the first inspection receive follow-up visits and notices until they are brought into compliance. Every property complies with the defensible space regulations every year. The inspection checklist includes:

- Making sure the street address is visible from the street and contrasts with background—suggested 5" or 6" numbers.
- Cut grasses and mule ears 6" or shorter to 100' from house or to property line.
- Rake and remove pine needles to 100' from house or to property line—okay to leave 1-2" for mulch.
- Remove accumulated pine needles from the roof.
- Cut grasses, thin brush and other flammable vegetation to 100' from house or to the property line.
- Clear debris (slash, pine needle piles, construction debris and flammable storage) from around the structure.
- Clear vegetation to mineral soil around firewood storage piles.
- Remove brush, limbs, grass, needles and debris 10' in all directions from around propane tanks.
- Limb adult trees up to a minimum of 6' from the ground.
- Remove dead tree limbs touching or overhanging roofs and decks.
- Remove all tree limbs a minimum of 10' from chimneys and stovepipes.
- Remove all dead and dying trees from the property.
- Install a ½ inch mesh screen spark arrester on chimneys and stovepipes

O.7 Mitigation Strategy

O.7.1. Mitigation Goals and Objectives

The OVFD/OVPSD adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

O.7.2. Mitigation Actions

The planning team for the OVFD/OVPSD identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. The following hazards were considered a priority for purposes of mitigation action planning:

- Avalanche
- Dam Failure
- Earthquake
- Floods: 1%/0.2% annual chance
- Floods: Localized Stormwater
- Landslides, Mudslides, and Debris Flows
- Severe Weather: Freeze and Snow
- Severe Weather: Heavy Rains and Storms
- Tree Mortality
- Wildfire

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 in the Base Plan benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the countywide public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each priority hazard for the five year coverage of this planning process, each jurisdiction has focused on identifying those projects which are realistic and reasonable for them to implement and would like to preserve their hazard priorities should future projects be identified where the implementing jurisdiction has the future capacity to implement.

Multi-Hazard Actions

Action 1. Community-Wide Emergency Notification System

Hazards Addressed: Earthquake, Avalanche, Dam Failure, Drought, Floods, Landslides, Severe Weather, Wildfire

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: The population of Olympic Valley can increase more than ten-fold over the course of several hours on a Saturday morning. Presently, there is no way of effectively alerting most residents and visitors of a hazard and the actions to be taken in response.

A community-wide emergency notification system could be implemented with relative ease and cost-efficiency in a compact area like Olympic Valley. Permanent, changeable message boards located along Squaw Valley Road at the west and east ends of the Valley could be used to alert residents and visitors of a hazard and refer them to the frequency for a low-power FM transmitter that would transmit more detailed information and recommended courses of action.

Other Alternatives:

- No action
- Emergency siren/air horn

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Olympic Valley Fire Department

Cost Estimate: Approximately $100,000

Benefits (Losses Avoided): Ability to notify a large number of people in the area of existing disaster or another emergency. Ability to direct people to tune their radio to a certain frequency to get further information and instructions.

Potential Funding: Potentially funded by a grant or combination of grants.

Timeline: Depending on funding

Project Priority: High

Action 2. Emergency Water Supply Interconnection to Martis Valley

Hazards Addressed: Contamination of sole source aquifer, loss of source wells due to disaster, earthquake, and drought. Wildland fire mitigation through increased fire protection services

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: The community of Olympic Valley draws its drinking water from a single source aquifer that is very small, unprotected and is very sensitive. Source water travels rapidly through the aquifer making contamination of the supply of deep concern. Prolonged or extended drought consistent with changing global weather patterns could lead to overdraft of the limited supply.

Olympic Valley is geographically separate from outlying communities that may provide an emergency interconnection. A feasibility study conducted in 2009 determined that a connection to the Truckee Donner PUD or the Northstar CSD to be feasible with no fatal flaws in securing water rights, environmental constraints, or rights of way.

The purpose of the project is to provide a redundant source of supply that is geographically diverse with a reliable means of delivery. The delivery system will provide water service and fire protection to outlying areas while providing a utility corridor for natural gas and high speed communication.

Other Alternatives: The Redundant Water Supply Preferred Alternative Analysis, Farr West Engineering 2015 looked at alternatives in depth and determined that the connection to the Martis Valley Aquifer to be the best most reliable and feasible alternative

Existing Planning Mechanism(s) through which Action Will Be Implemented: The feasibility study and the alternatives analysis were funded by the California Department of Water Resources through Prop. 89. The District will seek additional funding through Prop. 1. The next phase of the project will be the environmental analysis under CEQA and securing permits.

Responsible Office/Partners: The Olympic Valley Public Service District is presently the lead agency for the project and has or is developing partnerships with the Placer County, Placer County Water Agency, Truckee Donner PUD, Northstar CSD, Tahoe City PUD, Alpine Springs CWD, Sudden Link Cable, Southwest Gas, and other state and local agencies

Cost Estimate: Planning level cost estimates range from $23,520,000 to $25,200,000 depending on the final alignment

Benefits (Losses Avoided): The project would provide an alternative water supply to multiple communities while bringing high speed fiber optics communication and natural gas to the area. The benefits of the project are increased fire protection along the Truckee River corridor between Truckee and Alpine Meadows where there currently is none. A partnership with Southwest Gas bringing natural gas to the area would lower fire danger by eliminating thousands of propane tanks and reducing on road transport by tanker trucks supplying propane. The project seeks to avoid loss of essential services during an emergency or natural disaster.

Potential Funding: Grants, partnerships, bonds, customer service fees

Timeline: CEQA and project permitting is the next phase. The timeline for permits ranges from 12 to 24 months with construction following final funding.

Project Priority: This project is a high priority

Action 3. OVPSD/Mutual Water Company Intertie

Hazards Addressed: Contamination of sole source aquifer, loss of source wells due to disaster, earthquake, and drought. Wildland fire mitigation through increased fire protection services.

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: The community of Olympic Valley has 2 water systems that provide drinking water to its residents. An intertie would enable both systems to support the other with water in case of an issue due to natural disaster or operational issues.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: OVPSD has worked to receive grant funding to help further design the intertie and do further hydraulic modeling to find the best locations for an intertie.

Responsible Office/Partners: OVPSD

Cost Estimate: Planning level cost estimates range from $500,000 to $600,000 depending on final locations.

Benefits (Losses Avoided): The project would help ensure both systems had access to drinking water during and after a natural disaster. It would also offer operational redundancy when either system has maintenance or upgrade projects going on.

Potential Funding: Grants, partnerships, bonds, customer service fees.

Timeline: Ongoing pursuit of grants for planning funding.

Project Priority: This project is a high priority.

Action 4. Squaw Creek Siphon

Hazards Addressed: Pollution of the Environment due to Flood or Erosion

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: During the 1997 flood the wastewater conveyance system in Squaw Valley was compromised due to erosion in multiple locations.

The Squaw Creek Siphon conveys wastewater from around 200 home across and under Squaw Creek where it ties into the Squaw Valley Interceptor. High velocity flood waters cut downward and eroded the creek bottom in the 1997 flood completely exposing the Squaw Creek Siphon. After the flood waters receded the District installed rock gabions upstream, downstream and over the Squaw Creek Siphon to protect the pipeline. The 1997 flood has been characterized by Placer County as a 50 year event, a similar or larger event would potentially damage or wash away the Squaw Creek Siphon causing wastewater to pollute Squaw Creek and the Truckee River.

The Squaw Creek Siphon Project seeks to replace the existing siphon with a redundant and larger siphon adjacent to and deeper than the existing siphon.

Other Alternatives: There are no feasible alternatives

Existing Planning Mechanism(s) through which Action Will Be Implemented: The OVPSD Sewer System Master Plan

Responsible Office/Partners: Olympic Valley Public Service District is the lead agency for the project

Cost Estimate: $350,000 to $400,000

Benefits (Losses Avoided): Avoids loss of critical facility and pollution of the environment

Potential Funding: Grants, loans, developer fees, service fees

Timeline: 5 to 10 years

Project Priority: Medium

Action 5. Water Tank Earthquake Retrofit Projects

Hazards Addressed: Property protection and loss of lifeline services due to earthquake or land subsidence which could result in catastrophic tank failure

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: The District's East Tank (500,000 gal) was constructed in 1980 and is designed to withstand snow loads but not lateral stress from a substantial earthquake. The East tank is located up gradient from several single family homes that would be heavily impacted due to a tank failure.

The Mutual Water Company Steel Tank (300,000 gal) is located adjacent to a wash that sustained mud flows in the 1997 flood that caused significant erosion of the tanks earth foundation pad. Both Mutual Water Company Tanks are located up gradient from numerous single family homes that would be heavily impacted due to a tank failure.

The project would entail a seismic analysis by a qualified geotechnical firm of the Mutual water tanks and the Districts East Tank. Seismic retro-fit would be designed and employed of deemed necessary.

Other Alternatives: None

Existing Planning Mechanism(s) through which Action Will Be Implemented: None.

Responsible Office/Partners: OVPSD

Cost Estimate: $50,000 to $500,000 depending on scope of project.

Benefits (Losses Avoided): Property protection and loss of lifeline services due to earthquake or land subsidence which could result in catastrophic tank failure

Potential Funding: Funding for the project may come from grants, low interest loan, or from District and Mutual Water Company reserves if or when available.

Timeline: 2022 or beyond depending on funding.

Project Priority: Medium

Action 6. Easement Abatement/Maintenance of Emergency Access

Hazards Addressed: Multi hazard (Avalanche, Dam Failure, Earthquake, Floods: 1%/0.2% annual chance, Floods: Localized Stormwater, Landslides, Mudslides, and Debris Flows, Severe Weather: Freeze and Snow, Severe Weather: Heavy Rains and Storms, Tree Mortality, Wildfire)

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: One way in and out of the valley

Other Alternatives: do nothing

Existing Planning Mechanism(s) through which Action Will Be Implemented: Emergency access/egress for wildland emergencies

Responsible Office/Partners: Placer County, State of California (Cal Fire), USFS

Cost Estimate: unknown

Benefits (Losses Avoided): avoid loss of life during wildland fire

Potential Funding: Grants and private partnerships

Timeline: unknown

Project Priority: High

Action 7. Towable Generator for Powering Booster Stations

Hazards Addressed: Wildfire, Earthquake, Floods, Dam Failure, Landslides, Severe Weather

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: Olympic Valley PSD has a booster station that does not have an onsite generator. Currently a towable generator would be rented for a prolonged power outage. Purchasing a towable generator sized to run the booster station would increase resiliency of the water system through many kinds of disasters.

Other Alternatives: none

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office/Partners: Olympic Valley Public Service District

Cost Estimate: Approximately $50,000

Benefits (Losses Avoided): Ability to pump water into our highest zone during any kind of power outages. Continue to provide water during wildfire with the power out.

Potential Funding: Grants

Timeline: 2022 or 2023 depending on funding

Project Priority: medium

Action 8. Emergency Water Supply Interconnection to Martis Valley

Hazards Addressed: Contamination of sole source aquifer, loss of source wells due to disaster, earthquake, and drought. Wildland fire mitigation through increased fire protection services

Goals Addressed: 1, 2, 3, 4, 5, 6, 7

Issue/Background: The community of Olympic Valley draws its drinking water from a single source aquifer that is very small, unprotected and is very sensitive. Source water travels rapidly through the aquifer making contamination of the supply of deep concern. Prolonged or extended drought consistent with changing global weather patterns could lead to overdraft of the limited supply.

Olympic Valley is geographically separate from outlying communities that may provide an emergency interconnection. A feasibility study conducted in 2009 determined that a connection to the Truckee Donner PUD or the Northstar CSD to be feasible with no fatal flaws in securing water rights, environmental constraints, or rights of way.

The purpose of the project is to provide a redundant source of supply that is geographically diverse with a reliable means of delivery. The delivery system will provide water service and fire protection to outlying areas while providing a utility corridor for natural gas and high speed communication.

Other Alternatives: The Redundant Water Supply Preferred Alternative Analysis, Farr West Engineering 2015 looked at alternatives in depth and determined that the connection to the Martis Valley Aquifer to be the best most reliable and feasible alternative

Existing Planning Mechanism(s) through which Action Will Be Implemented: The feasibility study and the alternatives analysis were funded by the California Department of Water Resources through Prop. 89. The District will seek additional funding through Prop. 1. The next phase of the project will be the environmental analysis under CEQA and securing permits

Responsible Office/Partners: The Olympic Valley Public Service District is presently the lead agency for the project and has or is developing partnerships with the Placer County, Placer County Water Agency, Truckee Donner PUD, Northstar CSD, Tahoe City PUD, Alpine Springs CWD, Sudden Link Cable, Southwest Gas, and other state and local agencies

Cost Estimate: Planning level cost estimates range from $23,520,000 to $25,200,000 depending on the final alignment

Benefits (Losses Avoided): The project would provide an alternative water supply to multiple communities while bringing high speed fiber optics communication and natural gas to the area. The benefits of the project are increased fire protection along the Truckee River corridor between Truckee and Alpine Meadows where there currently is none. A partnership with Southwest Gas bringing natural gas to the area would lower fire danger by eliminating thousands of propane tanks and reducing on road transport by tanker trucks supplying propane. The project seeks to avoid loss of essential services during an emergency or natural disaster

Potential Funding: Grants, partnerships, bonds, customer service fees

Timeline: CEQA and project permitting is the next phase. The timeline for permits ranges from 12 to 24 months with construction following final funding

Project Priority: Medium Priority